Therefore it cannot be ruled out that the phospholipid constitutes an integral part of the storage complex of chromogranin. Phospholipids are believed to be bound to proteins by ionic interaction between the phosphatidyl phosphate group and the amino group of lysine (Hanahan & Brockerhoff, 1965). DL-Lysine at 10mM concentration added to the lysate before gel filtration on Sephadex G-200 in 0.1M-phosphate buffer, pH 6.5, caused a complete dissociation of the phospholipid from the protein component that was not observed when lysine was omitted. Thus it is not unlikely that the dissociating effect observed with tris buffer of low ionic strength may be explained as a competitive binding of the tris ion with the phosphate group of the phospholipid.

In granular lysates, freed of catecholamines and ATP by gel exclusion on Sephadex or extensive dialysis, the ratios of phosphate bound to protein were found to be 0.2–0.4 $\mu\text{g. atom of P/mg. of protein}$ at solvent concentrations in the range 0.015–4M-NaCl.

Free phospholipids and lipoproteins are most frequently characterized by their low molecular densities, as determined by flotation techniques. Samples of granular lysates showed a sedimentation pattern at a density of 1.24g./ml. (NaBr) in the analytical ultracentrifuge, and flotation was observed with a density of 1.50g./ml. In sucrose of density 1.34g./ml. the lysate protein appeared to be close to equilibrium even after 24 hr. at 100 000g.

These observations are consistent with the presence of chromogranin as a lipoprotein complex of very high density, reflecting its rather low concentration of bound phospholipid.

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Coupling of Transcription to Translation in the Synthesis of Enzymes by *Escherichia coli*

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In a previous communication (Mehdi & Yudkin, 1967) we reported that in the presence of 500 $\mu\text{g. of chloramphenicol/ml.}$, which blocks the movement of ribosomes, transcription of the β -galactosidase cistron is prevented. If, however, the movement of ribosomes is permitted (e.g. in the presence of puromycin or 50 $\mu\text{g. of chloramphenicol/ml.}$) transcription can continue without the concomitant synthesis of protein.

The synthesis of β -galactosidase by wild-type *Escherichia coli* is known to be subject to catabolite repression (Magasanik, 1961). In the studies just described, we used strain LA-12G, which was believed to be free of catabolite repression, to avoid difficulties in interpreting experiments that involved inhibitors. However, even this strain shows catabolite repression under some conditions (V. Moses & M. D. Yudkin, unpublished work). It could therefore be argued that our previous conclusion that transcription is coupled to translation in the induced synthesis of β -galactosidase is unsound.

We therefore did analogous experiments with ornithine transcarbamylase (OTCase), a biosynthetic enzyme. We confirmed that the synthesis of this enzyme is insensitive to catabolite repression.

In *E. coli* BC28, the synthesis of OTCase is fully derepressed in minimal medium in the absence of arginine but completely repressed in the presence of arginine (Sercarz & Gorini, 1964). Cells grown in the presence of arginine were filtered and then incubated in arginine-free minimal medium for 5 min. to derepress OTCase (derepressing phase). They were then transferred back to medium with arginine, and enzyme formation was measured in the ensuing growth phase. If puromycin or chloramphenicol at 50 $\mu\text{g./ml.}$ was present during derepression, enzyme was synthesized for 5–6 min. in the growth phase. However, as in our work with β -galactosidase (Mehdi & Yudkin, 1967), no enzyme was produced in the growth phase when chloramphenicol was present at 500 $\mu\text{g./ml.}$ during derepression.

These results lend support to the conclusion that in bacteria growing in the absence of inhibitors, transcription normally depends on the translation of messenger into protein.

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Preparative Polyacrylamide Gel Electrophoresis in the Study of Isoenzymes

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Analytical electrophoresis in gel media (originally starch gel and more recently polyacrylamide) has proved of considerable value in the investigation of enzyme heterogeneity. The limitations of the methods available for the identification, quanti-